Erigeron annuus and *Medicago lupulina* are generally classed as annuals, they are regularly biennial in New York alfalfa fields.

While the appearance of the hibernating dodder is such that there seems little reason to doubt that it really is alive and capable of further growth, the writers have thought it best to place the matter beyond question by forcing the threads into growth. This has been accomplished several times by placing the dodder-infested crowns in a moist chamber for a few days. Given warmth and moisture the dodder threads begin to lengthen promptly. In six such experiments the dodder-infested crowns were placed in contact with thrifty young alfalfa plants growing in pots in a moist inoculation chamber in a greenhouse. In every case the dodder started promptly, established itself on the alfalfa plants and there made a vigorous growth.

Our observations have been confined to the State of New York; but dodder hibernates there so frequently and under such a variety of conditions as regards soil and exposure, that we can but believe that it is perennial also in other parts of the United States.

Whether other species besides *Cuscuta Epithymum* are perennial, we cannot now say. In every instance in which the identification of the dodder has been made possible by the appearance of flowers, the species has been found to be *C. Epithymum.*

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NOTES ON SAGITTARIA

By Kenneth K. Mackenzie

Almost all American botanists are acquainted with the common arrow-head (*Sagittaria latifolia* Willd.), and are familiar with the great amount of variation in the shape of its leaves. These are ordinarily strongly sagittate, but they vary from several inches broad to but two or three millimeters. All botanists are, however, thoroughly agreed that these variations, while striking, are of no importance from a systematic standpoint, but depend entirely on the conditions under which the plant has grown. This, then, being the thoroughly understood condition with reference

to the above species, one necessarily approaches the study of related species with similar thoughts in mind.

Two plants closely related to the common arrow-head were separated in 1894 by Mr. Jared G. Smith in his revision of the North American species of the genus. All the standard manuals since that time have recognized these two plants as valid species, and the distinctness of *Sagittaria Engelmanniana* J. G. Smith and *Sagittaria longirostra* (Micheli) J. G. Smith, as these two plants were named, has not been questioned. They are, of course, both thoroughly distinct from *Sagittaria latifolia*, but when one comes to study the distinctions relied on between the two plants themselves, he soon finds out that the distinctions emphasized are the very ones which are universally agreed to be of no value in separating forms of *Sagittaria latifolia.*

Thus Mr. Smith's own key is as follows:

"Fertile pedicels much shorter than the bracts; leaves ample; beak of the achenium stout, erect..... *R. longirostra*

"Fertile pedicels longer than the bracts; leaves with linear lobes; beak of the achenium erect ..... *S. Engelmanniana*"

Practically the same key is used in the Illustrated Flora except that the achenium characters are omitted, and properly so, because in Mr. Smith's detailed description he says that *S. Engelmanniana* has a stout beak, thus leaving no marks of difference in this respect.

In the recently issued "Gray's Manual" the key used is

"Stout; leaf-blades broadly ovate-oblong..... *S. longirostra*

"Slender; leaf-blades linear ..... *S. Engelmanniana*"

So much then for the history of the plants, and now for an experience of my own with them. Although I had collected the plants before this year, the collections never had been under the most favorable conditions, but this year conditions seemed to be just right, when on Labor Day I went to Forked River in the New Jersey pine-barrens. Immediately beyond the station there, there is an artificial pond, the shores and shallower portions of which I quickly found were lined with *Sagittaria.* It was in fine fruiting condition and many specimens agreed well with *S. Engelmanniana* as described in the manuals, but others had

broader leaves. Continuing my journey around the pond I found back in the bushes at the margins other specimens with the broad leaves and stouter appearance of *S. longirostra*, but I also found all manner of intergradation between the two, just as one would find with *S. latifolia*. In fact as many forms could have been found as there have been of the common plant. As to the comparative length of bracts and pedicels all I can say is that these organs varied with individual plants just as in *S. latifolia*, and differences in their comparative length are of no value in separating the plants under discussion.

My conclusion then is that *S. longirostra* and *S. Engelmanniana* as described in the manuals are but forms of the same species. Whether *S. Engelmanniana* is technically based on specimens really representing a species distinct from *S. longirostra*, is a question which Dr. Small is now investigating for the North American Flora. At all events, however, the characters heretofore relied on to separate these plants are plainly insufficient.

NOTES ON RUTACEAE — II

Xanthoxylum cubense P. Wilson, comb. nov.

Zanthoxylum juglandifolium Rich. Ess. Fl. Cub. 332. 1845. Not Willd. 1806.

Fagara juglandifolia Krug & Urban, Bot. Jahrb. **21**: 587. 1896.

Type locality: In high mountains of Vuelta de Abajo and around Guanimar, Cuba.

Distribution: Cuba.

Xanthoxylum jamaicense P. Wilson, sp. nov.

A glabrous tree 5–10 m. tall with a spiny trunk; branches unarmed or armed with few, solitary, slender, brownish prickles, 3–6 mm. long; leaves odd-pinnate, 13–24 cm. long; leaflets 3–9, oblong to oval or somewhat obovate, 2.8–11 cm. long, 1.5–4.8 cm. broad, short-petioluled or subsessile, more or less crenate, short and obtusely acuminate or rarely rounded at the apex, cuneate and equilateral or inequilateral at the base, dull or somewhat lustrous above, paler and the venation more prominent beneath; inflorescence terminal, paniculate-corymbose; staminate